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## *PREDICTING THE IMPACT OF SEXUAL ABUSE ON WOMEN: THE ROLE OF ABUSE SEVERITY, PARENTAL SUPPORT, AND COPING STRATEGIES*

*L. L. Merrill  
C. J. Thomsen  
B. B. Sinclair  
S. R. Gold  
J. S. Miller*

*Report No. 99-25*

20040319 069

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NAVAL HEALTH RESEARCH CENTER  
P. O. BOX 85122  
SAN DIEGO, CA 92186-5122

BUREAU OF MEDICINE AND SURGERY (MED-02)  
2300 E ST. NW  
WASHINGTON, DC 20372-5300



## Predicting the Impact of Child Sexual Abuse on Women: The Role of Abuse Severity, Parental Support, and Coping Strategies

Lex L. Merrill  
Naval Health Research Center

Cynthia J. Thomsen, Barbara B. Sinclair,  
Steven R. Gold, and Joel S. Milner  
Northern Illinois University

Female Navy recruits ( $N = 5,226$ ) completed surveys assessing history of childhood sexual abuse (CSA), childhood strategies for coping with CSA, childhood parental support, and current psychological adjustment. Both CSA and parental support independently predicted later adjustment. In analyses examining whether CSA victims' functioning was associated with CSA severity (indexed by 5 variables), parental support (indexed by 3 variables), and coping (constructive, self-destructive, and avoidant), the negative coping variables were the strongest predictors. A structural equation model revealed that the effect of abuse severity on later functioning was partially mediated by coping strategies. However, contrary to predictions, the model revealed that childhood parental support had little direct or indirect impact on adult adjustment.

Research on the effects of child sexual abuse (CSA) can be characterized in terms of three generations of research questions that address the what, when, and how of CSA effects (see Fazio & Zanna, 1982; cf. Briere, 1992). In the first generation of CSA research, investigators have attempted to catalog the short- and long-term effects that may result from CSA experiences. In the second generation, researchers have endeavored to identify variables that moderate the relationship between CSA and negative outcomes. This research has attempted to identify factors that differentiate CSA victims who suffer severe and protracted impairment from those who experience less deleterious long-term effects. Finally, the third generation of research has consisted of attempts to specify the mediating processes through which CSA produces long-term negative consequences. In the present study, we addressed each of these issues within a large sample of young adult female U.S. Navy recruits.

### First-Generation Research: What Are the Effects of CSA?

Researchers working on first-generation issues have identified a range of psychological, behavioral, emotional, and interpersonal difficulties that are associated with CSA. These relationships have been documented in both male and female participants and in college student, clinical, community, and national probability samples (for reviews, see Beitchman, Zucker, Hood, DaCosta, & Akman, 1991; Beitchman et al., 1992; Briere & Elliot, 1994;

Briere & Runtz, 1993; Browne & Finkelhor, 1986; Kendall-Tackett, Williams, & Finkelhor, 1993; Polusny & Follette, 1995; Trickett & Putnam, 1998). In addition to numerous qualitative reviews, four recent meta-analyses have confirmed that CSA is associated with maladjustment (Jumper, 1995; Neumann, Houskamp, Pollock, & Briere, 1996; Rind & Tromovitch, 1997; Rind, Tromovitch, & Bauserman, 1998). Although these meta-analyses differ in several respects, including their criteria for study inclusion, all concluded that CSA was associated with negative psychological sequelae. However, the effect sizes were small ( $.10 < r < .15$ ) in terms of J. Cohen's (1988) criteria. (Although Jumper, 1995, reported a medium effect size of  $r = .26$ , a reanalysis of her data by Rind et al., 1998, yielded an effect size of  $r = .15$ , in line with those reported in the other three meta-analyses.) Thus, evidence indicates that CSA is associated with negative psychological outcomes but that these effects are small, with CSA accounting for only 1%–2% of the variance in adjustment. This suggests either that CSA has uniformly small effects on the functioning of its victims or, more plausibly, that it has large effects on some victims and small effects on others. Consistent with the latter possibility is research showing that many CSA victims report negligible effects of the experience, with only a small minority reporting severe and lasting consequences (Baker & Duncan, 1985).

Despite the consistent finding that CSA is associated (albeit modestly) with poor psychological adjustment, it cannot be concluded that CSA causes maladjustment. The primary impediment to establishing causality is the fact that CSA often coexists with other difficult life circumstances, such as a negative home environment or other forms of abuse, that might account for the poor long-term adjustment. In particular, researchers have increasingly called attention to the link between CSA and various forms of family dysfunction and pathology, such as low levels of parental support and high levels of parental conflict (Alexander & Lupfer, 1987; Edwards & Alexander, 1992; Finkelhor & Baron, 1986;

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Lex L. Merrill, Naval Health Research Center, San Diego, California; Cynthia J. Thomsen, Barbara B. Sinclair, Steven R. Gold, and Joel S. Milner, Center for the Study of Family Violence and Sexual Assault, Northern Illinois University.

Correspondence concerning this article should be addressed to Lex L. Merrill, Naval Health Research Center, P. O. Box 85122, San Diego, California 92186-5122. Electronic mail may be sent to merrill@nhrc.navy.mil.

Friedrich, Urquiza, & Beilke, 1986; Fromuth, 1986; Harter, Alexander, & Neimeyer, 1988; Nash, Hulse, Sexton, Harralson, & Lambert, 1993; Vogeltanz et al., 1999). Studies that have directly examined whether apparent CSA effects are due to confounded familial variables have yielded mixed results. Although some researchers (e.g., Fromuth, 1986; Harter et al., 1988) have demonstrated that many differences in psychological adjustment between CSA victims and nonvictims are no longer significant once family environment has been taken into account, others (e.g., Boney-McCoy & Finkelhor, 1996; Peters, 1988) have reported that abuse contributes to the prediction of psychological dysfunction after controlling for family environment. In the one meta-analysis that examined this issue, Rind et al. (1998) reported an association, albeit weak ( $r = .13$ ), between CSA and various markers of a dysfunctional family environment. Moreover, although both CSA and poor family environment were associated with psychological dysfunction, the family environment effect was substantially stronger ( $r = .29$  vs.  $r = .09$ ), and statistically controlling for family environment effects reduced the percentage of significant CSA-symptom relationships obtained across samples from 41% to 17%. Although variations in definitions of CSA and family environment across studies preclude firm conclusions, these meta-analytic results suggest that family environment may be a stronger determinant of symptomatology than is CSA and that some apparent CSA effects may be due to variables that co-occur with CSA, such as family dysfunction.

In the present study, we first assessed whether CSA and parental support were associated. Next, we examined the joint and independent effects of parental support and CSA on a range of psychological symptoms. In addition to comparing the relative strength of CSA and parental support as predictors of adult psychological functioning, this analysis allowed us to examine whether CSA and parental support interact in predicting long-term adjustment. Theorists and researchers studying social support (e.g., Alloway & Bebbington, 1987; S. Cohen & Wills, 1985) have debated whether support is best understood as having positive effects regardless of the individual's situation (the main-effect hypothesis) or only (or especially) when the recipient is under substantial stress (the buffering hypothesis). Most research on the impact of social support on the long-term adjustment of CSA victims has examined only the main-effect model without addressing the possible buffering effect of support (but see Ray & Jackson, 1997). In the present study, we examined both possibilities.

### Second-Generation Research: When Will the Effects of CSA Be Strongest?

Unlike first-generation research, which considers differences between CSA victims and nonvictims, second-generation research focuses on variability in outcomes among CSA victims. The quest for variables that influence the magnitude of CSA effects has yielded a number of likely candidates. One set of potential moderator variables includes attributes of the abuse experience per se that may be associated with severity of outcomes. Specifically, researchers have examined whether CSA effects vary depending on factors that are thought to reflect abuse severity, such as abuse duration, use of force, relationship to the perpetrator, and age at which abuse first occurred. Although several studies (e.g., Bennett, Hughes, & Luke, 2000; Williams, 1993) have shown significantly

greater psychological impairment among victims of severe abuse, other studies (e.g., Gold, Milan, Mayall, & Johnson, 1994; Tremblay, Hebert, & Piche, 1999) have found little evidence of a relationship between abuse severity and symptomatology. Conflicting findings in this domain are difficult to reconcile because researchers typically use different subsets of these variables as indicators of abuse severity (see Rind et al., 1998).

A second general category of variables that may predict the extent to which CSA victims experience negative outcomes relates to the social context within which the abuse takes place. Most research in this realm has examined the impact of social support and family environment on the outcomes of abuse victims. As discussed above, although support could have either a main effect or a buffering effect on adjustment, research has almost exclusively examined main effects. In general, this research suggests that CSA victims with positive family environments and high levels of support suffer less extreme long-term CSA consequences than their peers who lack these resources (e.g., Conte & Schuerman, 1987; Esparza, 1993; Everson, Hunter, Runyon, Edelson, & Coulter, 1989; Gold et al., 1994; Spaccarelli & Kim, 1995; Testa, Miller, Downs, & Panek, 1992; Wyatt & Mickey, 1987).

A third factor that may influence the extent to which CSA victims demonstrate long-term impairment is the manner in which they interpret and cope with the abuse experience. Coping in this context refers to the strategies—cognitive, affective, or behavioral—that an abuse victim uses to manage the internal and external stress generated by the abuse experience (Proulx, Koverola, Fedorowicz, & Kral, 1995; Spaccarelli, 1994). At present, several measures of coping are in use, and various taxonomies of coping style have been proposed. Perhaps the simplest and most enduring of these simply bifurcates coping strategies in terms of whether they involve approach or avoidance of stimuli related to the stressful event (for a review, see Roth & Cohen, 1986). Several studies have found that the use of avoidant coping methods (e.g., avoidance, denial, distancing, and disengagement) by CSA victims is associated with negative psychological outcomes (Coffey, Leitenberg, Henning, Turner, & Bennett, 1996; Gold et al., 1994; Johnson & Kenkel, 1991; Leitenberg, Greenwald, & Cado, 1992; Tremblay et al., 1999). Although fewer studies have examined self-destructive coping (e.g., risk-taking behaviors, substance abuse), it has also been associated with negative outcomes for CSA victims (Gold et al., 1994; Johnson & Kenkel, 1991; Runtz & Schallow, 1997). In contrast, approach strategies (e.g., expressing one's feelings, engaging in cognitive reframing, and seeking social support) are thought to be associated with positive outcomes (Himelein & McElrath, 1996). However, several studies have not found the expected relationship between constructive coping and functioning in CSA victims (Gold et al., 1994; Leitenberg et al., 1992; Sigmon, Greene, Rohan, & Nichols, 1996; Tremblay et al., 1999; but see Runtz & Schallow, 1997).

### Third-Generation Research: Process Models of CSA Effects

Second-generation research has provided some evidence that CSA victims may be more likely to experience adverse consequences if the abuse is severe, if the family environment is pathological, and if they use maladaptive coping strategies for dealing with the abuse. However, this research provides little insight into

the interplay of these factors in predicting the mental health outcomes of abuse victims. An advantage of the process models that are the focus of third-generation research is that they require investigators to make explicit predictions about causal pathways between the variables that influence CSA sequelae. Spaccarelli (1994) proposed such a model to explain the process through which CSA leads to psychological impairment. In his model, the main exogenous predictors of symptomatology levels are support resources and abuse stress (construed broadly to include not only characteristics of the abuse experience but also other stressors that may result from the abuse or its disclosure, e.g., family disruption and contact with the legal system). The model suggests that the effects of abuse stress and support resources on outcomes such as psychological adjustment are mediated by two factors: cognitive appraisals of the abuse and strategies used in coping with the abuse.

Although research has confirmed many of the expected relations between the predictors in this model and abuse outcomes, Spaccarelli's (1994) mediational model has not been subjected to empirical test. In the present study, we tested a model similar to, although more circumscribed than, Spaccarelli's theoretical model. Specifically, we tested a model in which the effects of abuse severity and parental support on long-term symptomatology are mediated by the manner in which the individual copes with the abuse experience. We compared a completely mediated model with a model in which abuse severity and parental support had both direct and indirect effects on functioning. The inclusion of these direct paths allow for the possibility that the influence of abuse severity and parental support on adult functioning is mediated by factors other than the manner in which the abuse victim copes with the experience.

This model incorporates several specific predictions. First, we expected that more severe abuse would be associated with lower levels of parental support. This might be the case, for example, because supportive parents are more likely to protect children from chronic and severe forms of abuse or because children who experience extreme CSA may come to see their parents as unsupportive. Second, we predicted that parental support would be associated with greater use of adaptive, and less use of maladaptive, coping strategies. Children in supportive family environments are more likely to experience positive models of coping and more likely to have support and assistance in carrying out their positive coping efforts (Esparza, 1993). In contrast, more severe forms of abuse were expected to increase negative coping efforts. Severe abuse is believed to produce lower perceived control of the situation for the CSA victim, a situation that may render constructive forms of coping ineffective or one that may be so overwhelming that avoidant and self-destructive modes of coping appear to be the only viable solution. Our predictions regarding the effect of abuse severity on constructive coping were less clear. The above logic might suggest that severe abuse should lead to lower levels of constructive coping. Alternatively, as severity increases, victims may increase their use of all sorts of coping strategies. Consistent with this reasoning, Runtz and Schallow (1997) found that abuse severity was predictive of increased use of both positive and negative coping strategies. Finally, as previous researchers have

found, self-destructive and avoidant coping should be associated with poorer psychological outcomes. Although evidence of the efficacy of constructive coping strategies for averting negative outcomes is sparse, we nonetheless predicted that constructive coping would be associated with improved long-term functioning.

Three recent studies have examined whether coping mediates the relationship between CSA severity and adjustment. Shapiro and Levendosky (1999) found no evidence for a mediational role of coping in a study of psychological distress among 80 female adolescent CSA victims. In fact, they found that coping was unrelated to either CSA or distress. Testing a similar model in a sample of 50 children, Tremblay et al. (1999) likewise found no evidence that the effects of abuse severity on symptoms were mediated by coping. However, Runtz and Schallow (1997) reported evidence that the effects of CSA severity on symptoms were mediated by the use of both positive and negative coping strategies in a sample of 302 college students; abuse severity increased both types of coping, and positive coping increased adjustment whereas negative coping reduced adjustment.

In addition to examining coping as a possible mediator of the relationship between CSA and adjustment, two of these studies (Runtz & Schallow, 1997; Tremblay et al., 1999) examined support as another possible mediator. Neither study found any evidence that support plays this role. The model tested in the present study differs from these previous models in that we consider support to be an exogenous rather than an endogenous variable. That is, the models advanced by Tremblay et al. (1999) and Runtz and Schallow (1997) assumed that CSA exerts a causal influence on actual or perceived levels of support received, whereas we assume no such causal relationship. Although it is plausible that CSA has a causal impact on support, other causal orderings are also possible. For example, the existence of support may influence the likelihood or severity of abuse (see Briere, 1992). Therefore, unless support is construed very narrowly, as referring only to support in the immediate aftermath and specific context of the abuse, we believe that it is better conceived of as an independent predictor of psychological outcomes than as a consequence of abuse that mediates abuse effects on psychological outcomes.

## Method

### Participants

Of 5,473 female U.S. Navy recruits invited to complete a survey, 5,226 (96%) agreed to participate. Some participants were eliminated because they did not provide sufficient information to be classified in terms of CSA (11%) or because they had invalid profiles (8%) or provided incomplete responses (4%) to the validity scales of one of our measures, the Trauma Symptom Inventory (TSI; Briere, 1995). After these participants were excluded, the final sample consisted of 4,098 female recruits,<sup>1</sup> 28%

<sup>1</sup> We examined whether those who were excluded from the samples because of missing or invalid data systematically differed from those retained. In terms of demographics, included and excluded cases differed in ethnicity,  $\chi^2(N = 5,110) = 34.76, p < .001$ , but did not significantly differ in age, education, family income, or marital status. Whites and Latinas constituted a higher proportion of included cases (60% and 11%, respectively) than of excluded cases (53% and 9%), whereas African Americans



Table 1  
*Demographic Characteristics of Victims and Nonvictims of Child Sexual Abuse (CSA)*

Characteristic	CSA	No CSA	df	N	Test statistic
Age (years)			3991	3,993	-1.38
M	19.8	19.6			
SD	2.6	2.6			
Family income (%)			4002	4,004	3.28*
Under \$25,000	42	36			
\$25,000-\$49,999	37	40			
\$50,000 or more	21	24			
Ethnicity (%)			5	4,019	13.85
White	60	59			
African American	19	22			
Latina	13	11			
Asian American	3	4			
Native American	3	2			
Other	2	2			
Education (%)			3	4,087	7.33
Less than high school	3	4			
GED	3	2			
High school diploma	86	85			
Some college	8	9			
Marital status (%)			3	4,078	40.06**
Single	84	90			
Married	8	5			
Cohabiting	6	3			
Divorced/separated/widowed	2	2			

Note. Test statistics are *t* values for continuous variables (age and family income) and chi-square values for the remaining variables. GED = general equivalency diploma.

\**p* < .01. \*\**p* < .001.

(*n* = 1,134) of whom reported experiences that met our criteria for CSA (described below). Table 1 provides the demographic characteristics of our sample, separately for CSA and no-CSA participants. CSA victims and nonvictims did not differ significantly in terms of age, ethnicity, or education. (The significance level for this and all subsequent analyses was set at  $\alpha = .01$  to partially offset the gain in power engendered by our large sample size.) However, CSA and no-CSA participants differed significantly in family income and marital status. With regard to income, CSA victims were more likely than nonvictims to report that the annual income in their families of origin was less than \$25,000. With regard to marital status, CSA victims were more likely than nonvictims to be married or cohabiting and less likely to be single. These effects, however, were small ( $r = .05$  and  $\phi' = .10$ , respectively).<sup>2</sup>

and those reporting their ethnicity as "other" constituted a lower proportion of included cases (21% and 8%, respectively) than of excluded cases (28% and 10%). This difference was small ( $\phi' = .08$ ). In terms of the study variables, included and excluded cases did not significantly differ in rates of CSA or attributes of CSA (use of force, intercourse, paternal involvement, number of perpetrators, and number of incidents), the three indices of parental support, or constructive or avoidant coping strategies. However, included cases reported less use of self-destructive coping strategies,  $F(1, 940) = 12.05$ ,  $p < .01$ , and higher levels of symptoms, multivariate  $F(10, 4902) = 13.54$ ,  $p < .001$ , than excluded cases. These effects were also small ( $r_s = .11$  and  $.16$ , respectively). Overall, then, the two groups did not differ on most relevant variables, the size of differences that did occur was small, and the differences revealed no consistent pattern. It is therefore unlikely that our results were significantly biased by the exclusion of those with missing data or invalid TSI profiles.

## Measures

If a respondent failed to complete 10% or fewer of the items on any of the multi-item scales described below, her missing response or responses were replaced with her own mean response across the remaining scale items. If more than 10% of the items on a multi-item scale were incomplete, or if any of the single-item variables were incomplete, the respondent was excluded from all analyses involving the relevant variables. Resulting variations in sample size across specific analyses due to missing data on individual measures are indicated below.

**Demographic and family history questionnaire.** This questionnaire contained items assessing general demographic information including age, ethnicity, income of the family of origin, educational background, and marital status. Additional questions assessed aspects of the respondent's family and peer environment, including two questions that assessed parental involvement. These questions asked "How involved was your mother or stepmother [father or stepfather] in raising you?" Responses were made on a 5-point scale (1 = *not at all involved*, 5 = *extremely involved*) and were averaged to create an index of parental involvement.

**Parental support.** The Parental Support Scale (PSS; Fromuth, 1986) was designed to assess the degree to which individuals perceive their parents as supportive of them. The PSS consists of 11 items that describe specific parental behaviors or attitudes with respect to the child. Parti-

<sup>2</sup> For analyses of variance, *r* was our measure of effect size, computed from  $\eta^2$  using the formula provided by Haase, Ellis, and Ladany (1989); for chi-square tests,  $\phi'$  was our measure of effect size, computed using the formula provided by J. Cohen (1988). Both indices range from 0 to 1, and according to Cohen's guidelines, for both of these indices, values of .10 are considered *small*, .30 *medium*, and .50 *large*.

parents rated their agreement with each item twice, first with reference to their mothers or stepmothers and then with reference to their fathers or stepfathers, on the basis of how their parents acted "while you were growing up." Responses were made on a 5-point Likert-type scale and were averaged to obtain separate maternal and paternal support scores. Fromuth reported evidence supporting the validity and reliability ( $\alpha = .90$ ) of the PSS for combined maternal and paternal support. In the present study, reliabilities were .88 and .87 for maternal and paternal support, respectively.

**CSA.** Childhood sexual experiences were assessed with a modified version of the Sexual Events Questionnaire (Finkelhor, 1979). Respondents were asked to indicate whether, before the age of 18, they had ever experienced sexual kissing or touching or been made to touch another person's sexual parts, either by a family member or by a nonfamily member who was 5 or more years older than they were. Similarly, they were asked to indicate whether, before the age of 18, they had ever experienced oral, anal, or vaginal intercourse or had a finger or object inserted in their anus or vagina, either by a family member or by a nonfamily member who was 5 or more years older. For each such experience that a respondent reported, she was asked to provide further information, including her relationship to the perpetrator, her own age and the age of the perpetrator when it first happened, whether physical force or threats had been involved, and the number of times it happened (on a scale ranging from 0 to 99).

Participants were classified as having experienced CSA only if they reported one or more contact sexual experiences before the age of 14 with someone at least 5 years older. Those who reported no experiences meeting these criteria constituted the no-CSA group. The additional information that CSA respondents provided about their sexual abuse experience (or experiences) was used to create five variables indexing the severity of the abuse experience. Respondents were considered to have experienced more severe CSA to the extent that the abuse involved (a) sexual intercourse, (b) force or threats, or (c) their father or stepfather. In addition to these three dichotomous variables, we had two continuous indicators of severity: the number of different individuals who had perpetrated CSA against the victim and the total number of CSA incidents that the victim had experienced (collapsed across perpetrators).

**Coping.** The original "How I Deal With Things" Scale (Burt & Katz, 1987) asks women to rate the frequency with which they have used each of 33 different coping behaviors in dealing with adult sexual assault. In the present study, we adapted this measure to assess coping with CSA. Item phrasings were altered slightly (e.g., changed from present to past tense). In addition, we included only 29 of the original 33 items (dropping the 4 items that had failed to load on any factor in the factor analysis reported by Burt and Katz), and we added an item ("ran away from home") likely to be more relevant to victims of CSA than to victims of adult sexual assault. Respondents who had experienced CSA were asked to rate the frequency with which they used each of the 30 coping strategies listed (1 = *rarely*, 5 = *usually*) to deal with their childhood sexual experience (or experiences) "in the weeks and months after it first occurred."

Based on a factor analysis of their original scale, Burt and Katz (1987) developed five subscales, each measuring a different type of coping: Avoidance, Nervous/Anxious, Self-Destructive, Expressive, and Cognitive. In a study that used the scale to examine coping with child physical and sexual abuse, Runtz and Schallow (1997) found that a three-factor solution provided the best fit to the data. They labeled their factors Expressive/Cognitive (11 items), Self-Destructive (13 items), and Avoidance (5 items). In the present study, factor analyses revealed a three-factor solution similar, although not identical, to that reported by Runtz and Schallow.<sup>3</sup> The Constructive coping factor contained 10 items representing a variety of proactive coping strategies, including behavioral changes, cognitive reframing, support seeking, and self-acceptance (e.g., "Took concrete actions to make positive changes in my life"). The Self-Destructive coping factor included 8 items that represent behavioral acting

out or escapist forms of coping (e.g., "Drank a lot of alcohol or took other drugs more than usual"). The Avoidant coping factor included 7 items that represent attempts to repress or deny thoughts and feelings associated with abuse (e.g., "Slept a lot and tried not to think about what happened"). Scores on each coping scale were computed by averaging responses to the relevant items. Internal consistencies (Cronbach's alpha) for the three subscales ranged from .77 (self-destructive) to .85 (avoidant).

**Psychological adjustment.** The Trauma Symptom Inventory (TSI; Briere, 1995) was used to assess current psychological health. The TSI is a 100-item questionnaire designed to measure symptoms thought to result from acute and chronic trauma, including childhood abuse. Each item consists of a symptom (e.g., feeling tired, using sex to get love or attention) that is rated for frequency of occurrence in the past 6 months (0 = *never*, 3 = *very often*). The TSI includes three validity scales (Response Level, Atypical Response, and Inconsistent Response) that assess the tendency of respondents to endorse items with low base rates of endorsement or to respond inconsistently. As described above, participants with invalid profiles based on responses to these three scales (using the criteria recommended by Briere) were excluded from subsequent analyses.

The TSI provides scores on 10 clinical scales, which assess the following symptoms: Anxious Arousal, Depression, Anger/Irritability, Intrusive Experiences, Defensive Avoidance, Dissociation, Sexual Concerns, Dysfunctional Sexual Behavior, Impaired Self-Reference, and Tension Reduction Behavior. Scores on each scale were computed by summing ratings of the relevant items. Raw scores were converted to *T* scores ( $M = 50$ ,  $SD = 10$ ) by using norms provided by Briere (1995). Briere reported validity data showing that scores differed in predictable ways between groups of participants who did or did not have traumatic experiences, as well as showing predicted correlations between the TSI scales and several other measures of symptomatology. Briere also reported that the clinical scales were internally consistent, with alpha coefficients ranging from .74 to .91. In the present samples, reliabilities ranged from .76 to .89.

## Procedure

The measures used in the present study were part of a more extensive survey package administered to female Navy recruits during their first week of basic training at the Naval Recruit Training Center in Great Lakes, Illinois, between June 1996 and June 1997. Potential participants were provided with a Privacy Act statement and an informed-consent form, which were presented both verbally and in writing. The materials gave a detailed description of the contents of the survey and requested volunteers to participate in the "Survey of Recruits' Behaviors." Recruits were instructed that filling out the questionnaire was strictly voluntary and that a decision not to participate would carry no adverse consequences for them. They were also informed that they could leave any part of the survey blank and that they could stop at any time they wished.

A nonmilitary female proctor administered the survey package to groups of 30 to 50 female recruits. Participants were given 3 hr to complete the questionnaires, with breaks scheduled periodically. Respondents were randomly assigned to either an anonymous or an identified condition. Participants in the anonymous condition were informed that their responses would be completely anonymous and were not required to provide any

<sup>3</sup> To ensure that our factor solutions were robust, we conducted separate analyses (principal components with oblimin rotations) within the anonymous and identified conditions. Three factors were retained in each case, accounting for 41% and 42% of the total variance. To construct relatively homogeneous and unidimensional measures of each type of coping, we retained an item on a factor only if (a) it consistently loaded above .4 on that factor across the two conditions and (b) it did not consistently show a secondary loading above .4 on any other factor. Further details about this analysis are available on request.

identifying information. In contrast, because they were recruited to participate in a longitudinal study, respondents in the identified condition were informed that their responses would be confidential but not anonymous; these respondents were asked to provide identifying information.

## Results

### Analytic Strategy

Before testing our hypotheses, we conducted analyses to examine the distributional properties of our observed variables, transforming variables that showed substantial deviations from normality.<sup>4</sup> Although transformed variables were used in all subsequent analyses, for ease of interpretation, means and standard deviations are presented in the original response metric. We also examined whether scores on any of the main study variables (CSA, parental support, coping, and symptoms) varied as a function of condition (anonymous vs. identified). Neither CSA rates nor severity characteristics varied by condition,  $\chi^2$ s < 2.37,  $ts$  < 1.22,  $ps$  > .10. Likewise, separate multivariate analyses of variance on the 3 parental support variables, the 3 coping measures, and the 10 TSI scales showed no significant effects of condition: for support,  $F(3, 3478) = 1.48, p > .20$ ; for coping,  $F(3, 780) = 2.79, p > .025$ ; and for symptoms,  $F(10, 3737) = 1.88, p > .025$ .

### First Generation: CSA and Psychological Adjustment

To control for the possible influence of demographic differences between groups, we conducted all comparisons of CSA victims and nonvictims using multivariate and univariate analyses of covariance (MANCOVAs and ANCOVAs). In these analyses, we controlled for all of the demographic variables in Table 1 (after first dummy coding categorical variables). This represents a conservative strategy because not all of these variables significantly differentiated the CSA victims and nonvictims. All reported means from these analyses have been adjusted for the demographic covariates.

We first examined whether CSA was associated with non-supportive family environments. To this end, we conducted a 2 (CSA vs. no CSA)  $\times$  2 (condition: anonymous vs. identified) MANCOVA on our three measures of parental support (maternal support, paternal support, and parental involvement). The analysis revealed the expected difference in parental support between CSA victims and nonvictims, multivariate  $F(3, 3476) = 35.79, p < .001, r = .17$ . ANCOVAs revealed that CSA victims, compared with nonvictims, reported that their parents were less involved with them (adjusted means = 3.76 and 4.05, respectively) and that both their fathers (adjusted means = 3.21 and 3.53) and mothers (adjusted means = 3.68 and 3.96) were less supportive,  $Fs(1, 3478) > 63.36, ps < .001, .13 < r < .14$ . Neither the effect of condition nor the Condition  $\times$  CSA interaction was significant ( $Fs < 1.83, ps > .10$ ). Although the relation between parental support and CSA was not large in magnitude, the fact that the relationship was significant highlights the importance of simultaneously considering family environment factors when examining sequelae of CSA.

Our next analysis examined the independent and joint effects of CSA and parental support on psychological adjustment. To this end, we conducted a 2 (CSA vs. no CSA)  $\times$  2 (parental support: low vs. high)  $\times$  2 (condition: anonymous vs. identified) MANCOVA on the 10 TSI clinical scale scores. We classified

participants as high or low in parental support by standardizing the three parental support variables, averaging them, and performing a median split on this composite variable. As expected, TSI scale scores of CSA victims and nonvictims differed significantly, multivariate  $F(10, 3407) = 18.34, p < .001, r = .22$ . Parental support was also a significant predictor of scores across the 10 TSI scales, multivariate  $F(10, 3407) = 9.98, p < .001, r = .16$ . Table 2 presents the results of univariate tests of the effects of both CSA and family support on each of the 10 TSI scales. As can be seen in Table 2, on each TSI scale, participants with low levels of parental support and those who had experienced CSA reported higher levels of symptoms than participants with high levels of support and those with no history of CSA.

Of importance, none of the interaction effects were significant, multivariate  $Fs(10, 3407) < 2.27, ps > .025$ . Of particular interest is the lack of a significant interaction between CSA and parental support. According to the buffering hypothesis, parental support should be of particular benefit to CSA victims, producing an interaction between CSA and support. The lack of significant interaction here suggests that parental support affords similar benefits to CSA victims and nonvictims, consistent with the main-effect hypothesis.

### Describing CSA Victims

Our first set of analyses established that CSA victims are less well adjusted than nonvictims, even after controlling for negative family environment. The remaining analyses concern only respondents who experienced CSA. The majority of CSA victims reported abuse that included intercourse (64%;  $n = 1,067$ ) and force or threats of force (58%;  $n = 1,037$ ). Most (71%) reported only one perpetrator, with 20% reporting two perpetrators and the remaining 9% reporting three to five perpetrators ( $n = 1,134$ ). Nearly a quarter of the CSA victims (22%;  $n = 1,134$ ) reported that they had been sexually abused by their father or stepfather. The number of reported instances of abuse was highly variable, ranging from 1 (reported by 22% of the sample) to more than 200 (reported by 2% of the sample), with approximately one half of the sample reporting 5 or fewer instances ( $n = 1,014$ ). Correlations among the severity indicators are provided in Table 3. All indicators were significantly and positively intercorrelated ( $Mdn r = .24; 954 < n < 1,134$ ).

With regard to the strategies used in coping with CSA, participants reported the greatest use of avoidance ( $M = 2.91, SD = 1.04, n = 961$ ), followed by constructive ( $M = 2.46,$

<sup>4</sup> Substantial nonnormality was operationalized as skew index values greater than 3.0 or kurtosis index values greater than 10.0 (see Kline, 1998). We explored the effects of several nonlinear transformations on the distributions of nonnormal variables and chose the transformation, if any, that best improved the distribution of that variable. Two of the abuse severity variables (number of incidents and number of perpetrators) and the Self-Destructive Coping Scale exhibited severe positive skew, which was reduced by logarithmic transformations. Although all of the parental support variables (maternal support, paternal support, and parental involvement) were negatively skewed, no transformations substantially improved the distributions of these variables. Finally, scores on all 10 of the TSI symptom scales were positively skewed and were subjected to square-root transformations.

Table 2  
Adjusted Mean *T* Scores on TSI Symptom Scales as a Function of Child Sexual Abuse (CSA) and Parental Support (PS)

Symptom scale	Low PS		High PS		CSA		PS	
	CSA	No CSA	CSA	No CSA	<i>F</i>	<i>r</i>	<i>F</i>	<i>r</i>
Anxious Arousal					28.19**	.08	28.98**	.08
<i>M</i>	52.41	50.66	50.63	48.54				
<i>SE</i>	0.37	0.27	0.48	0.24				
Depression					29.03**	.08	65.16**	.13
<i>M</i>	52.89	50.88	50.05	48.24				
<i>SE</i>	0.36	0.26	0.47	0.24				
Anger/Irritability					50.93**	.12	44.66**	.11
<i>M</i>	54.32	51.71	51.78	49.07				
<i>SE</i>	0.40	0.29	0.52	0.26				
Intrusive Experiences					93.45**	.16	45.55**	.11
<i>M</i>	55.27	51.06	52.21	48.67				
<i>SE</i>	0.41	0.30	0.54	0.28				
Defensive Avoidance					107.15**	.17	47.29**	.11
<i>M</i>	57.26	53.76	54.99	50.32				
<i>SE</i>	0.41	0.30	0.54	0.27				
Dissociation					57.41**	.13	58.10**	.13
<i>M</i>	57.46	54.18	54.25	51.11				
<i>SE</i>	0.44	0.32	0.57	0.29				
Sexual Concerns					113.38**	.18	48.82**	.11
<i>M</i>	56.43	51.88	53.32	49.54				
<i>SE</i>	0.42	0.30	0.54	0.28				
Dysfunctional Sexual Behavior					87.52**	.16	50.52**	.12
<i>M</i>	62.88	57.43	58.34	53.93				
<i>SE</i>	0.56	0.40	0.73	0.37				
Impaired Self-Reference					41.32**	.11	59.19**	.13
<i>M</i>	55.86	53.55	53.11	50.68				
<i>SE</i>	0.38	0.28	0.50	0.25				
Tension Reduction Behavior					76.14**	.15	70.39**	.14
<i>M</i>	59.11	54.70	54.71	51.37				
<i>SE</i>	0.47	0.34	0.61	0.31				
Valid <i>N</i>	641	1,222	384	1,483				

Note. TSI = Trauma Symptom Inventory.

\*\*  $p < .001$ .

$SD = 0.87$ ,  $n = 958$ ) and self-destructive ( $M = 1.65$ ,  $SD = 0.75$ ,  $n = 862$ ) coping strategies. Self-destructive and avoidant coping were significantly correlated ( $r = .48$ ). However, neither of these negative forms of coping was significantly associated with constructive coping ( $rs < .06$ ).

Table 3  
Intercorrelations Among Abuse Severity Indicator Variables

Severity indicator	1	2	3	4	5
1. Type	—				
2. Force	.34**	—			
3. Paternal	.11**	.11**	—		
4. Perps	.21**	.20**	.15**	—	
5. Incidents	.34**	.27**	.29**	.40**	—

Note. Type (0 = no intercourse, 1 = intercourse), Force (0 = no force or threats, 1 = force or threats), and Paternal (0 = no CSA by father or stepfather, 1 = perpetration by father or stepfather) were dichotomous; Perps (number of perpetrators) and Incidents (total number of CSA incidents) were continuous. Correlations between dichotomous variables are phi coefficients; those between one dichotomous and one continuous variable are point-biserial correlations; and those between two continuous variables are Pearson correlations.

\*\*  $p < .001$ .

With respect to parental support, on average, respondents reported relatively high levels of parental involvement ( $M = 3.68$ ,  $SD = 1.04$ ,  $n = 1,112$ ) and maternal support ( $M = 3.65$ ,  $SD = 0.97$ ,  $n = 1,087$ ). Paternal support scores, although slightly lower, were still above the scale midpoint of 3.00 ( $M = 3.20$ ,  $SD = 1.02$ ,  $n = 1,049$ ). Maternal and paternal support were positively correlated ( $r = .38$ ), and both were correlated with parental involvement ( $rs = .44$  and  $.49$ ). Mean *T* scores on each of the 10 TSI scales were previously presented (see Table 2). Compared with normative samples (Briere, 1995), CSA victims reported higher mean levels of symptoms on all scales (as indicated by mean *T* scores greater than 50.0). The TSI clinical scales were highly intercorrelated ( $.34 < r < .77$ ,  $Mdn = .58$ ;  $1,118 < n < 1,133$ ).<sup>5</sup>

### Structural Equation Modeling (SEM)

The remaining analyses focused on the factors that moderate the impact of CSA on adjustment (second generation) and the pro-

<sup>5</sup> The complete set of intercorrelations among all observed variables is available from Lex L. Merrill on request.



cesses through which CSA influences long-term adjustment (third generation). Both of these issues were addressed by using SEM. SEM allows for an examination of the relationships between latent variables, reducing the impact of measurement error on obtained results. SEM also provides a range of different indices for assessing goodness of fit of a specified model, as well as procedures for comparing the relative fit of different models. Model fit was assessed in several ways. Although the chi-square test is the standard goodness-of-fit test in structural modeling, this test is very sensitive to sample size; therefore, because our sample size was large, we relied primarily on other fit indices to assess the adequacy of our model. First, we examined the ratio of  $\chi^2/df$ . A good model fit is generally indicated by a  $\chi^2/df$  ratio less than 3.0 (Kline, 1998). Second, we examined the goodness-of-fit index (GFI; Jöreskog & Sörbom, 1993), an absolute fit index analogous to  $R^2$ , which indexes the proportion of variance in the observed variances and covariances that can be accounted for by the model. Third, we examined the nonnormed fit index (NNFI; Bentler & Bonett, 1980), an incremental fit index that indicates the proportion of improvement of the specified model in relation to a baseline (null) model that posits complete independence of all observed measures. The NNFI, unlike the GFI, controls for the complexity of the model. Finally, we examined the root-mean-square error of approximation (RMSEA; Steiger, 1980), an index that estimates the discrepancy, per degree of freedom, between model-fitted variances and covariances and the true population values. To put the RMSEA index into the same metric as the GFI and NNFI, we report  $(1 - \text{RMSEA})$  rather than RMSEA. After this transformation, all three indices range from 0 to 1, with values greater than .90 generally being interpreted as reflecting an adequate fit and a value of 1 reflecting optimal fit (Jöreskog & Sörbom, 1993). To allow for cross-validation and to assess for differences due to condition, we first conducted SEM analyses on the data from the anonymous condition and then tested on the data from the identified condition. These analyses included data for a total of 600 CSA victims (311 in the anonymous condition and 289 in the identified condition who provided complete data for all of the measures of interest). All SEM analyses were conducted with the maximum likelihood algorithm in LISREL 8 (Jöreskog & Sörbom, 1993).

Before using SEM to test our second- and third-generation predictions, it was necessary to evaluate the measurement model specifying the relations between our observed indicator variables and the underlying latent variables that they were believed to represent (Anderson & Gerbing, 1988). The measurement model addresses the question of whether the observed variables are related to latent theoretical constructs in the predicted manner. In the present study, the proposed model included 21 observed variables that were hypothesized to represent 2 exogenous latent variables (abuse severity and parental support), 3 partially endogenous latent variables (constructive, self-destructive, and avoidant coping), and 1 fully endogenous latent variable (symptoms). The abuse severity, parental support, and symptom latent variables were each represented by multiple indicators, which are listed in Table 4. Because the 3 latent coping variables were each represented by a single indicator, their error terms could not be estimated and were fixed at .20. As the loadings for these variables were fixed rather than estimated, they are not included in Table 4.

In the initial analysis of data from the anonymous condition, all of the observed variables showed statistically significant loadings

on the expected factors ( $ts > 5.20$ ,  $ps < .001$ ). However, the initial model resulted in a poor fit to the data. After examining residuals and modification indices, the model was modified to allow the errors associated with six pairs of indicator variables to covary. The variable pairs for which correlated errors were allowed in the modified model are provided at the bottom of Table 4. These correlations reflect a tendency for certain types of symptoms to covary, beyond the baseline tendency for all types of psychological symptoms to covary, because of shared method variance or because psychological dysfunction tends to be more complex than can be assessed by a single type of symptom.

The top half of Table 5 provides the goodness-of-fit indices for the initial and modified measurement models. As can be seen in the table, in both the anonymous and identified conditions, the modified model provided an acceptable fit to the data whereas the initial model did not. In both conditions, the improvement in fit was highly significant,  $\chi^2_{diff}(6) = 434.02$ ,  $p < .001$ . Coefficients for the modified model, including correlations between error terms, are provided in Table 4. Path coefficients are analogous to factor loadings, with higher values reflecting greater shared variance between an indicator and the underlying factor. Indicators with higher coefficients can be interpreted as the best indicators of the latent variable. Error terms associated with each indicator variable represent measurement error (the proportion of variance in the observed variable that is not explained by the common underlying factor). All path coefficients for the revised model were statistically significant in both conditions ( $p < .001$ ).

### *Second Generation: Moderators of the CSA-Adjustment Relationship*

To examine the second-generation issue of when CSA is likely to produce adverse effects, we examined the zero-order correlations of the predictor variables with the psychological adjustment of CSA victims. We examined the correlations between the latent variables because this essentially disattenuates the correlations for unreliability or measurement error in the observed indicators. Correlations are provided in Table 6. In both conditions, the strongest predictor of maladjustment among CSA victims was the use of self-destructive coping strategies, followed by the use of avoidant strategies. Each of the other three predictors—constructive coping, abuse severity, and parental support—was a weaker predictor, statistically significant in only one of the two conditions. Overall, these results suggest that self-destructive and avoidant coping are the strongest moderators of the CSA-adjustment relationship. That is, CSA victims are likely to fare most poorly when they use self-destructive or avoidant strategies for coping with abuse.

### *Third Generation: A Process Model of Adjustment Among CSA Victims*

In our final set of analyses, we tested a structural model specifying the hypothesized causal relationships among the latent variables. This addresses our third-generation question regarding the process through which abuse severity and parental support influence levels of long-term psychological impairment. Specifically, we used SEM to evaluate the relative fit of two mediational models. According to both models, parental support and abuse

Table 4  
*Path Coefficients for the Modified Measurement Model of Abuse Severity, Parental Support, Coping, and Symptoms*

Latent construct and indicator variable	Anonymous		Identified	
	Path coefficient	Error	Path coefficient	Error
Abuse severity				
Type	.76**	.42	.61**	.63
Force	.78**	.39	.49**	.76
Paternal	.32**	.89	.62**	.61
Perps	.48**	.77	.42**	.82
Incidents	.58**	.66	.71**	.50
Parental support				
Maternal support	.62**	.61	.56**	.69
Paternal support	.64**	.59	.62**	.61
Parental involvement	.78**	.39	.80**	.36
Psychological maladjustment				
Anxious arousal	.80**	.36	.81**	.34
Depression	.85**	.27	.84**	.30
Anger/irritability (AI)	.76**	.42	.77**	.40
Intrusive experiences (IE)	.75**	.44	.70**	.51
Dissociation	.84**	.30	.82**	.34
Sexual concerns (SC)	.60**	.64	.56**	.69
Dysfunctional sex behavior (DSB)	.53**	.72	.60**	.64
Impaired self-reference	.86**	.26	.84**	.29
Tension reduction behavior (TRB)	.75**	.44	.68**	.52
Defensive avoidance (DA)	.70**	.50	.64**	.58
Correlated errors				
SC with DSB	.41**		.38**	
SC with TRB	.21**		.22**	
DSB with TRB	.36**		.37**	
TRB with AI	.14**		.15**	
DA with IE	.20**		.28**	
DA with self-destructive coping	.20**		.23**	

\*\*  $p < .001$ .

severity influence the manner in which women cope with their abuse experience or experiences. In turn, the way in which the victim copes with abuse predicts her later level of psychological adjustment. Thus, the influence of the distal variables of family environment and abuse severity on adult functioning is indirect, mediated by coping style. The *full model* also incorporated direct (unmediated) effects of abuse severity and family support on psychological adjustment, reflected by paths from the exogenous parental support and abuse severity variables to the endogenous adjustment variable. These direct effects represent either unmediated effects of abuse severity and parental support or effects of these factors that are mediated by variables other than symptoms. The *reduced model* does not include direct paths from CSA severity and parental support to symptoms. Thus, this model specifies that the effects of abuse severity and parental support on adjustment are fully mediated by how the CSA victim copes with the abuse.

In analyses of the structural model, latent constructs assessed by multiple indicators were standardized, with variances fixed at 1. Exogenous latent variables (abuse severity and parental support) were allowed to correlate, as were the two negative coping strategies (avoidant and self-destructive). Fit statistics for the full and reduced models are provided in the bottom half of Table 5. Across the anonymous and identified conditions, both the full model and the reduced model provided an adequate fit to the data. However,

the full model failed to provide a significant improvement in fit compared with the reduced model,  $\chi^2_{diff}(2) < 6.40$ ,  $p > .025$ . Therefore, the more parsimonious reduced model was retained and further examined. Through an iterative process, we sequentially set the loadings of nonsignificant paths to 0 and examined the consequences for model fit. The effects of parental support on both negative forms of coping (i.e., self-destructive and avoidant) were not significant. These paths were consequently removed from the model. The removal of these paths did not significantly reduce model fit in either the anonymous or identified condition,  $\chi^2_{diff}(2) < 8.77$ ,  $ps > .01$ . Two additional paths—the paths from abuse severity to constructive coping and from constructive coping to symptoms—failed to reach significance, although they approached significance ( $.01 < p < .05$ ). However, because the removal of these paths produced a significant decrement in model fit,  $\chi^2_{diff}(6) > 18.61$ ,  $ps < .01$ , they were reinstated.

Fit statistics for the final model are provided in Table 5. The final model, developed on the data from the anonymous condition and cross-validated on the data from the identified condition, is provided in Figure 1. Path coefficients for the identified condition are provided in parentheses. As can be seen in Figure 1, the two paths that were marginally significant in the anonymous condition (abuse severity  $\rightarrow$  constructive coping; constructive coping  $\rightarrow$  symptoms) were statistically significant in the identified condition, whereas one path that was significant in the anonymous condition

Table 5

*Comparison of the Fit of Alternative Measurement and Structural Models of the Relations Among Abuse Severity, Parental Support, Coping, and Psychological Functioning*

Model	df	$\chi^2$	$\chi^2/df$	1 - RMSEA	GFI	NNFI
<b>Measurement model</b>						
Anonymous						
Initial	177	822.79**	4.65	0.89	0.80	0.77
Modified	171	388.77**	2.27	0.94	0.90	0.92
Identified						
Initial	177	779.80**	4.41	0.89	0.79	0.75
Modified	171	345.78**	2.02	0.94	0.90	0.92
<b>Structural model</b>						
Anonymous						
Full	173	397.36**	2.30	0.94	0.89	0.92
Reduced	175	403.57**	2.31	0.94	0.89	0.92
Final	177	407.49**	2.30	0.94	0.89	0.92
Identified						
Full	173	345.84**	2.00	0.94	0.90	0.93
Reduced	175	352.24**	2.01	0.94	0.90	0.92
Final	177	361.01**	2.04	0.94	0.89	0.92

Note. RMSEA = root-mean-square error of approximation; GFI = goodness-of-fit index; NNFI = nonnormed fit index.

\*\*  $p < .001$ .

(parental support  $\rightarrow$  constructive coping) was only marginally significant in the identified condition. The model for the two conditions was otherwise identical.

The final model indicates that abuse severity and parental support are negatively associated, and both variables are associated with the strategies used to cope with CSA. However, although severe abuse was associated with increased use of all three types of coping strategies, parental support was associated only with constructive coping. In turn, the strategies used in coping with CSA were predictive of long-term psychological functioning. Specifically, constructive coping was associated with decreased impairment, whereas both self-destructive and avoidant coping were associated with increased impairment. The indirect (mediated) effect of abuse severity on symptoms was significant in both conditions: anonymous,  $b = .32$ ,  $SE = .06$ ,  $z = 5.36$ ,  $p < .001$ ; and identified,  $b = .22$ ,  $SE = .06$ ,  $z = 3.79$ ,  $p < .001$ . In contrast, the indirect effect of parental support on symptoms was not statistically significant in either condition: anonymous,  $b = -.03$ ,  $SE = .02$ ,  $z = -1.78$ ,  $p > .05$ ; and identified:  $b = -.04$ ,  $SE = .02$ ,  $z = -1.88$ ,  $p > .05$ .<sup>6</sup>

## Discussion

### *First Generation: Are CSA Victims Psychologically Impaired?*

In the present study, we addressed issues concerning the effects of CSA on women's long-term psychological adjustment that correspond to three generations of research questions. First-generation issues concern the association between CSA and psychological maladjustment. In accord with a substantial body of research (Neumann et al., 1996; Vogeltanz et al., 1999), we found that CSA was a significant predictor of long-term psychological difficulties. This relationship was consistently observed across the 10 symptom domains of the TSI, reflecting a diverse array of

difficulties ranging from depression and anxiety to sexual problems and dissociative symptomatology.

Some have argued that many apparent relations between CSA and adjustment are spurious, arising from "third variables" such as maladaptive family environments that are correlated with both CSA and long-term adjustment (e.g., Rind et al., 1998). Our results argue against this conclusion. Although CSA victims in our sample reported less supportive family environments than did nonvictims, controlling for parental support did not eliminate the effect of CSA on symptoms. Even when considered simultaneously, both CSA and lack of parental support during childhood were significantly predictive of psychological symptoms in adulthood (see Boney-McCoy & Finkelhor, 1996). Moreover, counter to the claims of Rind et al. (1998) that family environment is a stronger predictor of adjustment than is CSA, our results suggest a slight advantage for CSA ( $r_s = .16$  and  $.22$ , respectively). Of course, effect size estimates are not absolute indicators of the importance of predictors because they depend on both the manner in which constructs are measured and sample characteristics. The relatively large ob-

<sup>6</sup> We also examined the possibility that parental support moderates the relationship among abuse severity, coping strategies, and symptoms. To this end, we split the CSA victims in each condition into those reporting relatively high versus relatively low levels of parental support and estimated the structural equation model (abuse severity  $\rightarrow$  coping  $\rightarrow$  symptoms) simultaneously for the two groups. First, we estimated the model constraining all coefficients to be equal for the two groups. Second, we estimated the model relaxing the equality constraints for the structural model, so that the path coefficients for relations among the latent variables were allowed to differ across groups. If support moderated the relations among the other variables in the model, the second model, in which the path coefficients were allowed to differ for high- and low-support groups, should have provided a better fit than the first. However, in neither condition was this the case,  $\chi^2_{diff}(6) = 7.03$  and  $8.86$  for the anonymous and identified conditions, respectively,  $ps > .10$ .

Table 6  
Correlations Among Latent Variables Representing Abuse Severity, Parental Support, Coping, and Psychological Symptoms

Latent variable	1	2	3	4	5	6
1. Abuse severity	—	-.27**	.09	.40**	.44**	.23**
2. Parental support	-.35**	—	.18	-.22*	-.18*	-.22**
3. Constructive coping	.22*	.08	—	.09	-.09	-.09
4. Self-destructive coping	.47**	-.21*	.09	—	.65**	.60**
5. Avoidant coping	.41**	.01	.13	.60**	—	.46**
6. Psychological symptoms	.12	-.10	-.18*	.48**	.33**	—

Note. Correlations above the diagonal area for the anonymous condition ( $n = 311$ ); those below the diagonal are for the identified condition ( $n = 289$ ).

\* $p < .01$ . \*\* $p < .001$ .

served effects of CSA in the present sample may be due to the relatively more severe forms of CSA experienced by participants in our sample (see Rind et al., 1998) or to the fact that our outcome measures were explicitly trauma related rather than being general measures of functioning (see Neumann et al., 1996; Rind et al., 1998). Similarly, the effects of family environment might have been stronger had we assessed additional aspects of family environment (e.g., cohesion, conflict) or had we assessed support specific to the abuse experience rather than general support.

Although several studies have shown that parental support is associated with adjustment among CSA victims, previous researchers have seldom examined whether support is more beneficial for victims than for nonvictims (the buffering hypothesis) or equally beneficial for both groups (the main-effect hypothesis). The absence of an interaction between CSA and parental support in the present study supports the main-effect model. Parental support was not uniquely helpful to CSA victims; it had equally beneficial effects for CSA victims and

nonvictims. We obtained similar results in our analysis of differences in adjustment among CSA victims. Support benefited all CSA victims, regardless of abuse severity. Nonetheless, it remains possible that parental support effects vary as a function of specific aspects of the abuse, such as the identity of the abuser. For example, parental support may have different effects when the parent is directly involved in the abuse than when he or she is not.

Regardless of whether CSA or parental support is a stronger predictor of symptoms, neither was a strong predictor in terms of absolute effect size. CSA accounted for only 5% of the variance in symptoms across the 10 scales of the TSI, and parental support accounted for only 3%. Although these effects are modest, we do not believe them to be trivial. Consider, for example, the fact that 55% of CSA victims showed clinically significant elevations ( $T$  scores greater than 65) on one or more TSI scales, whereas only 38% of nonvictims showed such elevations. This translates into an odds ratio of 1.96, indicating that CSA victims were nearly two times more likely than their

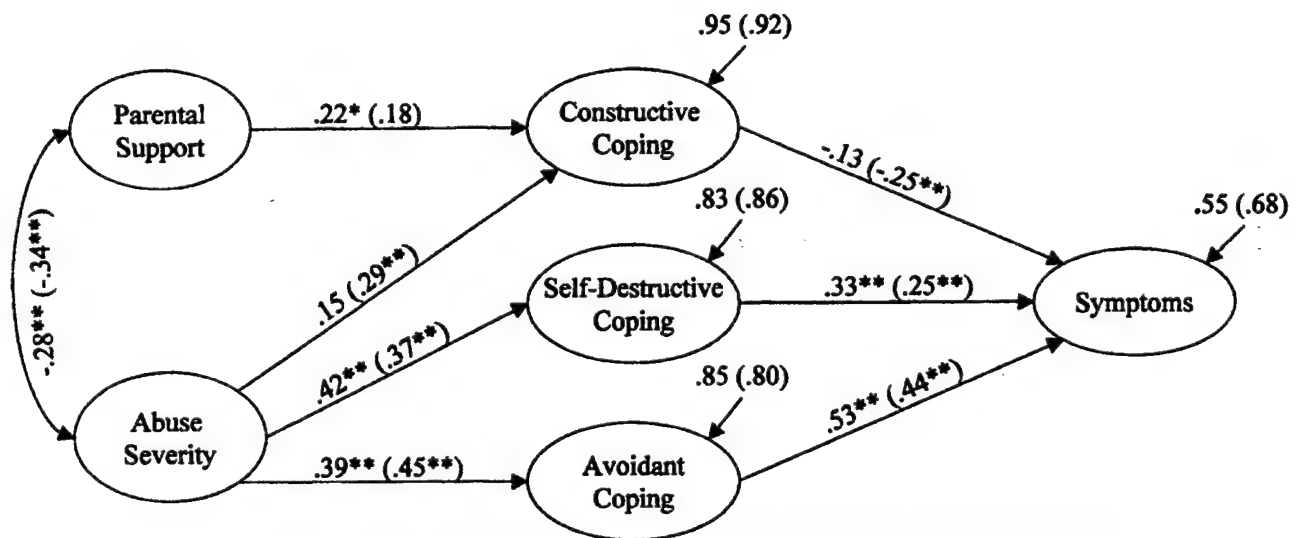


Figure 1. Final structural model of psychological adjustment among victims of child sexual abuse, estimated separately for participants in the anonymous and identified conditions. Coefficients in parentheses are for the identified condition. \* $p < .01$ . \*\* $p < .001$ .



nonabused counterparts to show clinical elevations on one or more TSI scales. Although statistically small, these effects are of practical significance.

### *Second Generation: Which CSA Victims Will Be Most Impaired?*

Second-generation research investigates variables that may predict which CSA victims will experience more or less severe impairment as a result of the experience. We examined three types of factors (abuse severity, parental support, and coping styles) that may help to explain this variability, differentiating CSA victims who experience severe psychological difficulties from those who do not. Correlations between latent variables representing psychological symptoms and the three types of predictor variables revealed that the two negative coping variables—self-destructive and avoidant—showed the strongest relations to symptoms, with medium to large positive relationships in both the anonymous and the identified conditions. In contrast, although constructive coping was associated with decreased symptoms, this relationship was much weaker and was significant only in the identified condition. Finally, abuse severity was associated with increased symptoms, and parental support was associated with decreased symptoms, although both effects were weak and significant only in the anonymous condition.

It is perhaps not surprising that coping bears the strongest relations to symptomatology, because both variables assess individual differences in psychological, emotional, and behavioral functioning. In contrast, the other two types of predictors—parental support and abuse severity—refer to factors external to the individual. Even beyond this, however, the distinction between negative coping and symptoms is somewhat vague. Both self-destructive and avoidant coping involve behaviors that might be construed as symptoms. In fact, it could be argued that the primary difference between the two types of variables is the time frame in which they were measured. Whereas the time frame for the coping variables was the weeks and months after the abuse experience (which transpired a minimum of 5 years before respondents' participation), symptoms were measured in the present. An alternative way of framing the relationship between negative coping and symptoms, then, is that the symptoms exhibited in the immediate aftermath of CSA tend to be quite stable over time, and therefore predictive of the types of difficulties the victim is likely to experience as an adult.

It is surprising that parental support and abuse severity did not exhibit stronger relations to symptomatology among CSA victims. Parental support predicted adjustment in the sample as a whole but was less consistently related to adjustment among CSA victims only. Importantly, this was not due to restricted variability. In fact, CSA victims exhibited greater variability than did nonvictims in both support and symptoms. With respect to severity, although we examined five commonly used indicators, it is possible that the inclusion of additional indicators (e.g., age at first incident, subjective assessments of severity) would have improved predictive power. Increases in the precision with which our indicator variables were operationalized may have also strengthened the observed relationship between abuse severity and symptomatology. In addition, little is known about the interrelations among indicators, and it is possible that their effects may combine in a nonlinear

fashion. Clearly, much remains to be done before we arrive at a full understanding of the constituents, dynamics, and consequences of abuse severity.

### *Third Generation: A Process Model of the Relationship Between CSA and Impairment*

Our third-generation model tested several predictions regarding the process through which CSA victims come to exhibit psychological difficulties. Parental support had neither direct nor indirect effects on symptomatology. Although support was positively related to constructive coping and constructive coping was negatively related to symptoms, both relationships were weak, yielding a nonsignificant indirect path. It is noteworthy that parental support was a significant predictor of constructive coping but not of avoidant or self-destructive strategies. This suggests that although individuals with supportive parents may have had more resources to support constructive coping efforts or better role models for this type of effort, support did not protect against later pathology by decreasing the use of maladaptive coping strategies.

For abuse severity, in contrast, there were significant indirect effects mediated through both negative forms of coping in both conditions and mediated through constructive coping in the identified but not in the anonymous condition. Thus, there was strong evidence that the effects of abuse severity on long-term adjustment were mediated by the manner in which the victim coped with the abuse. Furthermore, the fact that the direct effect of abuse severity on symptoms was not significant suggests that the relationship between severity of CSA and adult impairment was largely mediated by the coping strategies victims used in dealing with the abuse.

Although constructive coping was associated with decreased levels of symptomatology, this effect was substantially weaker than the effects of self-destructive and avoidant coping on symptoms. The weaker effect of constructive coping may explain why several studies have reported that this style of coping is not significantly associated with adjustment (e.g., Gold et al., 1994; Sigmon et al., 1996; but see Runtz & Schallow, 1997). Perhaps the failure of constructive coping to produce the expected gains in functioning occurred because this coping style requires the presence of other factors to be effectively deployed. The utility of constructive tactics such as expressing feelings and making efforts to improve the situation may rest on the availability of social or material resources that would give the child greater actual or perceived control over her environment. However, if this were the case, constructive coping might be expected to show a stronger relation to symptoms for abuse victims with supportive parents than for those with less supportive parents, and our moderational analyses did not show this to be the case (see Footnote 6).

The finding that both measures of negative coping strategies—Self-Destructive and Avoidant—were strongly associated with negative outcomes is consistent with the results of several studies (e.g., Coffey et al., 1996; Gold et al., 1994; Tremblay et al., 1999). Of these two types of coping, self-destructive coping, which includes behaviors such as running away from home, using alcohol or drugs, and suicidal thoughts or actions, seems to be the most detrimental. However, the majority of CSA victims report limited use of this type of coping strategy; perhaps these are coping strategies of last resort. In contrast, respondents in the present

study, like those in previous studies (e.g., Chaffin, Wherry, & Dykman, 1997; Leitenberg et al., 1992), relied heavily on avoidant coping strategies. Avoidant coping may be adaptive in the short term, preventing the child from becoming overwhelmed by stressors that she typically has little ability to control. Consistent with this suggestion, CSA victims perceive avoidant strategies as the most effective means of dealing with the abuse experience (Leitenberg et al., 1992). Avoidance may also be reinforced because it can appear to others that the child is not having difficulties. In fact, in one study (Chaffin et al., 1997), avoidant coping was associated with parental reports of fewer behavior problems. Nonetheless, research consistently documents that the long-term effects of this type of coping are negative (e.g., Coffey et al., 1996; Gold et al., 1994; Tremblay et al., 1999).

Although we tested only a part of the model, our results are generally consistent with the model proposed by Spaccarelli (1994) and provide the most direct test of his model to date. A fuller test would require broader measures of abuse severity (incorporating factors such as involvement with social services and the legal system) and support (including extrafamilial support resources) as well as the inclusion of additional measures of intervening cognitive processes such as interpretations of and attributions for the abuse (Gold, 1986).

Our results are also generally consistent with those of Runtz and Schallow (1997), who found evidence of significant mediation of CSA effects through both positive and negative coping. However, two other studies found no evidence that coping mediates the relationship between CSA and adjustment (Shapiro & Levensky, 1999; Tremblay et al., 1999). There are several methodological differences between these studies that may account for the difference in results. The samples used by Shapiro and Levensky (1999) and by Tremblay et al. (1999) were both smaller ( $N$ s = 80 and 50, respectively) and younger (ages 14–16 and 7–12, respectively) than those used by Runtz and Schallow (302 college students) and in the present study (600 Navy recruits). This raises the possibility that the prior two studies did not find mediational effects either because of low statistical power or because such effects are not evident until after adolescence. The ability of Runtz and Schallow to find effects was further increased by their inclusion of both CSA victims and nonvictims (unlike the other three studies, which included only CSA victims); because less than half of Runtz and Schallow's sample had experienced CSA, much of the apparent effect of CSA severity may have been due to differences between CSA victims and nonvictims. The studies that did not find effects also used measures of coping that were not specific to the abuse experience, whereas those that did find effects used abuse-specific (although in the case of Runtz and Schallow, not necessarily CSA-specific) measures. Other research suggests that abuse-specific measures of coping are better predictors of adjustment than are measures of coping in unrelated contexts (Sigmon et al., 1996; Steel, Wilson, Cross, & Whipple, 1996).

The major difference between our model and the two previous models that have included social support (Runtz & Schallow, 1997; Tremblay et al., 1999) is the placement of support within the model. Previous models have treated support as an endogenous variable, mediating between CSA and adjustment. In contrast, because support is a causally ambiguous variable (in that it may serve as a cause, a consequence, or merely a correlate of CSA and CSA severity; see Briere, 1992), in our model support was treated

as an exogenous variable. The differential placement of the support variable in our model as compared with previous models may reflect the use of different time frames in assessing support. In the present study, we asked respondents about parental support while they were growing up, whereas it appears that Runtz and Schallow (1997) as well as Tremblay et al. (1999) assessed current support (although neither explicitly describes the referent time frame). It would be reasonable to consider current support as a consequence of CSA, because one temporally preceded the other. If previous studies assessed current rather than childhood support, this could also explain why they found stronger effects of support on current functioning than were found in the present study.

### *General Research Design and Measurement Issues*

Like most studies on the long-term effects of CSA, we relied on retrospective self-report measures. The validity of self-report measures is threatened by a variety of possible biases that may result from deliberate dissembling as well as inadvertent distortions. Retrospective measures compound these problems by introducing biases due to the fallibility of memory, which may be particularly troublesome when dealing with childhood traumas such as CSA that may be suppressed or repressed from memory. In an attempt to reduce the impact of such distortions, we excluded respondents with invalid profiles according to the TSI validity scales. Even with this precaution, however, it is unlikely that our respondents uniformly provided completely veridical reports.

Our study incorporated an internal replication, examining whether the same pattern of effects was obtained when respondents completed the survey under different conditions. Whether participant responses were anonymous or identified had little apparent effect on the nature of responses, because few significant differences between the conditions emerged. One interpretation of this finding is that social desirability pressures are unlikely to have significantly biased responses, because these pressures should have been higher for identified than for anonymous respondents. Another possibility is that the manipulation was relatively weak and that more extreme manipulations might produce differences in reporting of negative or sensitive information. In any case, the replication of findings across these two conditions bolsters our confidence in the robustness of our results.

The present model adds to a growing corpus of knowledge regarding the processes through which CSA effects long-term consequences for psychological functioning. However, although our mediational model is consistent with the data across our two conditions, causal conclusions cannot be made because of the correlational nature of our data. Because our variables are ordered in terms of chronological precedence (e.g., abuse precedes coping with abuse, immediate coping with abuse precedes adult psychological functioning), we do not believe that another ordering would make logical or theoretical sense. Nonetheless, it remains possible that some of the variables in our model are associated by virtue of their relationships to some third variable or variables not included in the model. Only longitudinal research, in which measures of functioning and family environment are taken before as well as after the CSA experience, can yield definitive evidence of causal relations between abuse and family environment factors and later functioning.

Longitudinal research would also avoid the problems associated with retrospective reports and would allow for an examination of the possibility that variables such as coping strategies, parental support, and psychological symptoms vary across the course of the abuse experience and in its aftermath. In research that lacks the advantages of repeated measurements over time, the referent time frame and context given to respondents for completing specific measures may have a significant impact on results. For example, coping strategies can be measured as general characteristics of a person, specific to the abuse, or with reference to another kind of specific experience (e.g., conflict with a peer). Similarly, parental support and other aspects of the family environment can be assessed with specific regard to disclosure of the abuse experience or with respect to general levels of perceived support during childhood, at the present, or over the life span. Furthermore, symptoms, while typically assessed without specifying a context, can be assessed within the past month, past year, or lifetime. Because these considerations have important implications for the nature of causal models, researchers should carefully consider the time frame and context within which they measure constructs of interest, and they should provide this information when reporting their research.

Using a sample of Navy recruits, the present research replicates and extends findings based on clinical, college student, community, and national probability samples. The replication of CSA effects across such diverse samples contributes to our confidence in their generality. Nonetheless, because the majority of studies have been conducted in the United States and other Western industrialized societies, cross-cultural research is necessary to establish that these findings are generalizable to the broad range of human societies and populations. Although little research has examined cultural or ethnic differences in responses to CSA, there is some indication that such differences exist (e.g., Wyatt, 1990).

From a practical perspective, the strong relationship between coping strategies and long-term psychological adjustment suggests that it might be helpful to intervene early with children who have experienced CSA in an attempt to modify their choice of coping strategies. In this regard, however, we are concerned that in the present study the use of positive or constructive coping was not more successful in promoting better long-term adjustment. Although our data suggest that children should be helped to reduce their use of self-destructive and avoidant strategies, the data provide little insight into the alternative strategies that should be implemented in their place. We expect that future research will shed additional light on victim behaviors that are most effective in preventing severe long-term consequences of CSA, which then may serve as a basis for effective interventions.

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Received June 21, 2000

Revision received April 18, 2001

Accepted May 7, 2001 ■



**REPORT DOCUMENTATION PAGE**

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1. Report Date (DD MM YY) Oct 1999		2. Report Type Interim		3. DATES COVERED (from - to) Jan 99 to Jun 99	
4. TITLE AND SUBTITLE Predicting the Impact of Child Sexual Abuse on Women; The Role of Abuse Severity, Parental Support and coping Strategies				5a. Contract Number:	
6. AUTHORS Lex L. Merrill, Cynthia J Thomsen, Barbara B. Sinclair, Steven R. Gold & Joel S. Milner				5b. Grant Number:	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Health Research Center P.O. Box 85122 San Diego, CA 92186-5122				5c. Program Element: BUPERS	
8. SPONSORING/MONITORING AGENCY NAMES(S) AND ADDRESS(ES) Chief, Bureau of Medicine and Surgery Code M2 2300 E St NW Washington DC 20372-5300				5d. Project Number: Reimbursable	
				5e. Task Number:	
				5f. Work Unit Number: 6309	
				5g. IRB Protocol Number: NA	
				8. PERFORMING ORGANIZATION REPORT NUMBER Report No. 99-25	
				10. Sponsor/Monitor's Acronyms(s) BuMed	
				11. Sponsor/Monitor's Report Number(s)	
12 DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited.					
13. SUPPLEMENTARY NOTES Published in Journal of Consulting & Clinical Psychology, 2001; 69(6) 992-1006					
14. ABSTRACT (maximum 200 words)  Although the deleterious effects of Childhood Sexual Abuse (CSA) are well-established, little previous research has examined factors that predict better or worse outcomes in the aftermath of abuse. This study identified factors that might explain the observed variability in the psychological consequences of CSA in women and to determine if coping style is affected by the severity of CSA and/or family environment and if differences in coping style affect female adult psychological functioning. CSA histories were obtained from a sample of 5,235 female Navy recruits. In this study we tested a model of the impact of abuse severity and family environment on the manner in which females cope with CSA. In this same model, we evaluated the influence of coping style on psychological adjustment. Severity of abuse, parental support, and attachment style were significantly and independently associated with symptomatology and the strategies women reported having used to cope with the CSA experience. A mediational model, with coping style mediating the effects of abuse severity and family environment on symptoms, provided a good fit to the data; adding direct paths did not improve the fit of the model. Neither attachment style nor the severity of CSA contributed to the mediational model. These data suggest that under some circumstances female victims of CSA may benefit from therapeutic approaches that emphasize expressive coping skills.					
14. SUBJECT TERMS child sexual abuse; coping, therapy, trauma					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGE	18a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Commanding Officer
UNCL	UNCL	UNCL	UNCL	15	18b. TELEPHONE NUMBER (INCLUDING AREA CODE) COMM/DSN: (619) 553-8429